Amendments to the Claims:

The following listing of claims will replace any/all prior versions, and listings, of claims in the application, wherein additions are shown in underlined text and deletions are shown in strike-out text:

1-16. (Canceled).

17. (Currently Amended) A process for the selective dimerization of a lower alkene to a C_6-C_{12} alkene, which process comprises contacting, under catalytic distillation conditions, the lower alkene with ~~the~~ a catalytic composite ~~of claim 1, under catalytic distillation conditions~~ comprising:

a) a support structure, made of a non zeolite inorganic oxide, having a void fraction ranging from 0.30 to 0.95 and a surface area of from 40 m^2/g to 500 m^2/g, the support structure having a shape selected from a ring, a hollow cylinder, a cross or multi partition ring or cylinder with 2, 3, or 4 cell partitions, a saddle, a solid ring, a solid cylinder, a sphere, and a honeycomb body; and

b) from 0.01 to 10% by weight of a catalytically active species comprising a group VIII metal, based on the weight of the catalytic composite, which is deposited on the support structure.

18. (Original) The process according to claim 17, wherein the lower alkene is selected from 1-butene, 2-butene and isobutene, and the C_6-C_{12} alkene is selected from trimethylpentene, n-octene, dimethylhexene and methylheptene.

19. (Previously Presented) The process according to claim 17, wherein the catalytic composite is admixed with inert distillation packing.

20. (Original) The process according to claim 19, wherein the ratio of the catalytic composite to inert distillation packing is from 10:1 to 1:10.

21. (Original) The process according to claim 19, wherein the catalytic composite and inert distillation packing are used in separate zones of the catalytic distillation column.

22. (Original) The process according to claim 17, wherein the lower alkene is a C_4 alkene and the C_6 to C_{12} alkene is predominantly a C_8 alkene.

23. (Original) The process according to claim 22, wherein the C_8 alkene is a trimethylpentene.

24-29. (Canceled).

30. (Currently Amended) A process for preparing high octane compounds, the process comprising:

a) contacting, under catalytic distillation conditions to obtain a ~~C6 to C18 alkene~~C_6 to C_{18} alkene, a C_2 to C_6 alkene with a first catalytic composite, the first catalytic composite comprising:

(i) a support structure, made of a non zeolite inorganic oxide, having a void fraction ranging from 0.30 to 0.95 and a surface area of from 40 m^2/g to 500 m^2/g, the support structure having a shape selected from a ring, a hollow cylinder, a cross or multi partition ring or cylinder with 2, 3, or 4 cell partitions, a saddle, a solid ring, a solid cylinder, a sphere, and a honeycomb body, and

(ii) from 0.01 to 10% by weight of a catalytically active species comprising a group VIII metal, based on the weight of the catalytic composite, which is deposited on the support structure; and

b) contacting under catalytic distillation conditions to obtain a C_6 to C_{18} alkane the C_6 to C_{18} alkene from step a) with a second catalytic composite and hydrogen, the second catalytic composite comprising:

(i) a support structure, made of a non zeolite inorganic oxide, having a void fraction ranging from 0.30 to 0.95 and a surface area of from 40 m^2/g to 500 m^2/g, the support structure having a shape selected from a ring, a hollow cylinder, a cross or multi partition ring or cylinder with 2, 3, or 4 cell partitions, a saddle, a solid ring, a solid cylinder, a sphere, and a honeycomb body, and

(ii) from 0.01 to 10% by weight of a catalytically active species comprising a group VIII metal, based on the weight of the catalytic composite, which is deposited on the support structure, and a ligand ~~comprises~~

comprising one or more atoms selected from the group consisting of carbon, hydrogen, oxygen, nitrogen and phosphorus.

31. (Original) The process according to claim 30, wherein the process steps a) and b) are carried out in a single catalytic distillation column.

32. (Original) The process according to claim 30, wherein the process steps a) and b) are carried out in separate catalytic distillation columns.

33. (Previously Presented) The process according to claim 30, wherein the C_2 to C_6 alkene is a C_4 alkene and the C_6 to C_{18} alkene is a C_8 alkene.

34. (Original) The process according to claim 33, wherein the C_8 alkene is trimethylpentene.

35. (Canceled).

36. (Currently Amended) A process for the production of C_6-C_{18} alkenes, which process comprises contacting, under catalytic distillation conditions, a mixture of C_2-C_6 alkenes with ~~the~~ a catalytic composite ~~of claim 1, under catalytic distillation conditions~~ comprising:

a) a support structure, made of a non zeolite inorganic oxide, having a void fraction ranging from 0.30 to 0.95 and a surface area of from 40 m^2/g to 500 m^2/g, the support structure having a shape selected from a ring, a hollow cylinder, a cross or multi partition ring or cylinder with 2, 3, or 4 cell partitions, a saddle, a solid ring, a solid cylinder, a sphere, and a honeycomb body; and

b) from 0.01 to 10% by weight of a catalytically active species comprising a group VIII metal, based on the weight of the catalytic composite, which is deposited on the support structure.

37. (Original) A process according to claim 36, wherein each C_2-C_6 alkene in the mixture is oligomerized within different reactive zones found in a single catalytic distillation column.

38. (Original) A process according to claim 36, wherein each C_2-C_6 alkene is oligomerized within different reactive zones found in two or more linked catalytic distillation column.

39. (Previously Presented) A process according to claim 36, wherein the mixture of C_2-C_6 alkenes comprises one or more C_4 alkenes.

40. (Currently Amended) A process for the selective oligomerization of a lower alkene to a C_6-C_{18} alkene, which process comprises contacting, under catalytic distillation conditions, a mixture of C_2 to C_6 alkenes and C_1 to C_6 alkanes with ~~the~~ a catalytic composite ~~of claim 1, under catalytic distillation conditions~~ comprising:

a) a support structure, made of a non zeolite inorganic oxide, having a void fraction ranging from 0.30 to 0.95 and a surface area of from 40 m^2/g to 500 m^2/g, the support structure having a shape selected from a ring, a hollow cylinder, a cross or multi partition ring or cylinder with 2, 3, or 4 cell partitions, a saddle, a solid ring, a solid cylinder, a sphere, and a honeycomb body; and

b) from 0.01 to 10% by weight of a catalytically active species comprising a group VIII metal, based on the weight of the catalytic composite, which is deposited on the support structure.

41-47. (Canceled).

48. (New) The process according to claim 17, wherein the inorganic oxide is selected from the group consisting of alumina, silica, titania, zirconia and mixtures thereof, preferably from γ-alumina and α-alumina.

49. (New) The process according to claim 17, wherein the support structure is in the shape of a Raschig ring.

50. (New) The process according to claim 17, wherein the group VIII metal is nickel, palladium, platinum or rhodium.

51. (New) The process according to claim 17, wherein the group VIII metal is in the form of a metal salt, preferably a metal sulphate, a metal phosphate, a metal oxalate or a

metal acetate, or in the form of a metal complex.

52. (New) The process according to claim 17, wherein the catalytically active species is nickel sulphate or nickel chloride.

53. (New) The process according to claim 17, wherein the metal salt is in an ionic state and the catalytically active species is in admixture with ammonium sulphate or ammonium phosphate.

54. (New) The process according to claim 17, wherein the catalytically active species comprises a group VIII metal and a ligand, wherein the ligand comprises one or more atoms selected from the group consisting of carbon, hydrogen, oxygen, nitrogen and phosphorus, and wherein the group VIII metal is in the zero oxidation state.

55. (New) The process according to claim 30, wherein the inorganic oxide is selected from the group consisting of alumina, silica, titania, zirconia and mixtures thereof, preferably from γ-alumina and α-alumina.

56. (New) The process according to claim 30, wherein the support structure is in the shape of a Raschig ring.

57. (New) The process according to claim 30, wherein the group VIII metal is nickel, palladium, platinum or rhodium.

58. (New) The process according to claim 30, wherein the group VIII metal is in the form of a metal salt, preferably a metal sulphate, a metal phosphate, a metal oxalate or a metal acetate, or in the form of a metal complex.

59. (New) The process according to claim 30, wherein the catalytically active species is nickel sulphate or nickel chloride.

60. (New) The process according to claim 30, wherein the metal salt is in an ionic state and the catalytically active species is in admixture with ammonium sulphate or

ammonium phosphate.

61. (New) The process according to claim 30, wherein the catalytically active species comprises a group VIII metal and a ligand, wherein the ligand comprises one or more atoms selected from the group consisting of carbon, hydrogen, oxygen, nitrogen and phosphorus, and wherein the group VIII metal is in the zero oxidation state.

62. (New) The process according to claim 36, wherein the inorganic oxide is selected from the group consisting of alumina, silica, titania, zirconia and mixtures thereof, preferably from γ-alumina and α-alumina.

63. (New) The process according to claim 36, wherein the support structure is in the shape of a Raschig ring.

64. (New) The process according to claim 36, wherein the group VIII metal is nickel, palladium, platinum or rhodium.

65. (New) The process according to claim 36, wherein the group VIII metal is in the form of a metal salt, preferably a metal sulphate, a metal phosphate, a metal oxalate or a metal acetate, or in the form of a metal complex.

66. (New) The process according to claim 36, wherein the catalytically active species is nickel sulphate or nickel chloride.

67. (New) The process according to claim 36, wherein the metal salt is in an ionic state and the catalytically active species is in admixture with ammonium sulphate or ammonium phosphate.

68. (New) The process according to claim 36, wherein the catalytically active species comprises a group VIII metal and a ligand, wherein the ligand comprises one or more atoms selected from the group consisting of carbon, hydrogen, oxygen, nitrogen and phosphorus, and wherein the group VIII metal is in the zero oxidation state.

69. (New) The process according to claim 40, wherein the inorganic oxide is selected from the group consisting of alumina, silica, titania, zirconia and mixtures thereof, preferably from γ-alumina and α-alumina.

70. (New) The process according to claim 40, wherein the support structure is in the shape of a Raschig ring.

71. (New) The process according to claim 40, wherein the group VIII metal is nickel, palladium, platinum or rhodium.

72. (New) The process according to claim 40, wherein the group VIII metal is in the form of a metal salt, preferably a metal sulphate, a metal phosphate, a metal oxalate or a metal acetate, or in the form of a metal complex.

73. (New) The process according to claim 40, wherein the catalytically active species is nickel sulphate or nickel chloride.

74. (New) The process according to claim 40, wherein the metal salt is in an ionic state and the catalytically active species is in admixture with ammonium sulphate or ammonium phosphate.

75. (New) The process according to claim 40, wherein the catalytically active species comprises a group VIII metal and a ligand, wherein the ligand comprises one or more atoms selected from the group consisting of carbon, hydrogen, oxygen, nitrogen and phosphorus, and wherein the group VIII metal is in the zero oxidation state.